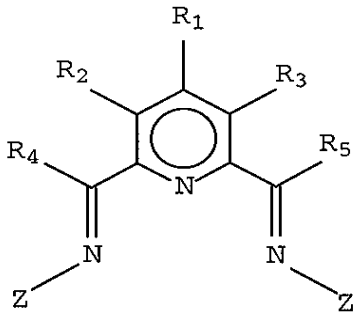
In the Claims:

Please amend the claims as follows:

1. (Currently amended) A process for production of higher linear alpha olefins and/or alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms comprising:

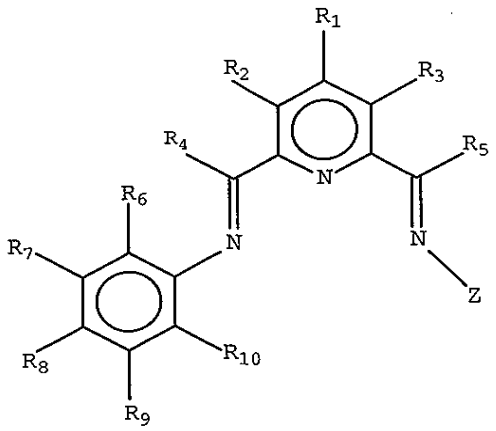
co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX_a complexes and/or one or more [bis-aryliminepyridine $MY_p.L_b^+][NC^-]_q$ complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC- is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R_1-R_5 are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3 vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being π-co-ordinated to the metal; said co-oligomerising being carried out under conditions comprising an ethylene pressure of ~~less than 2.5 MPa~~ from about 0.1 MPa to about 1.6 MPa and a temperature of from about -100°C to about 300°C.

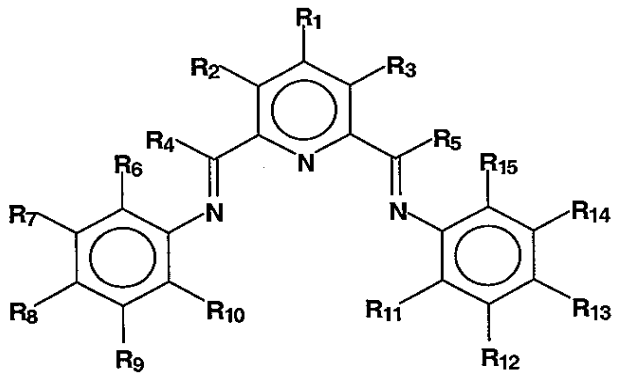
2. (Original) The process of Claim 1 wherein said ligand is of the formula,



(II)

wherein R_1-R_{10} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_6-R_{10} vicinal to one another taken together may form a ring; R_6 may be taken together with R_4 to form a ring; R_{10} may be taken together with R_4 to form a ring; Z is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being π-co-ordinated to the metal.

3. (Original) The process of Claim 1 wherein said ligand is of the formula,



(III)

wherein R_1-R_5, R_7-R_9 and R_{12}-R_{14} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_7-R_9 and R_{12}-R_{14} vicinal to one another taken together may form a ring; R_6 is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_7 or R_4 to form a ring; R_{10} is hydrogen, optionally

substituted hydrocarbyl, an inert functional group, or taken together with R_9 or R_4 to form a ring; R_{11} is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_5 or R_{12} to form a ring; and R_{15} is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_5 or R_{14} to form a ring.

4. (Original) The process of Claim 3 wherein R_1-R_5, R_7-R_9 and R_{12}-R_{14} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_7-R_9 and R_{12}-R_{14} vicinal to one another taken together may form a ring; R_6 is a primary carbon group, a secondary carbon group or a tertiary carbon group; and provided that:

when R_6 is a primary carbon group none, one or two of R_{10}, R_{11} and R_{15} are primary carbon groups, and the remainder of R_{10}, R_{11} and R_{15} are hydrogen;

when R_6 is a secondary carbon group none or one of R_{10}, R_{11} and R_{15} is a primary carbon group or a secondary carbon group and the remainder of R_{10}, R_{11} and R_{15} are hydrogen;

when R_6 is a tertiary carbon group all of R_{10}, R_{11} and R_{15} are hydrogen; and

any two of R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14} and R_{15} vicinal to one another, taken together may form a ring.

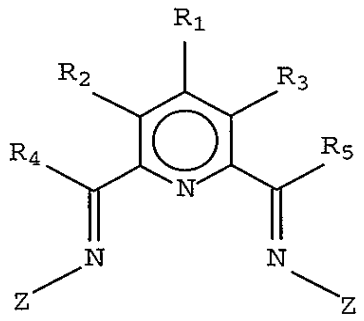
5. (Original) The process of Claim 3 wherein R_1-R_5, R_7-R_9 and R_{12}-R_{14} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_7-R_9 and R_{12}-R_{14} vicinal to one another taken together may form a ring; R_6 is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_7 or R_4 to form a ring; R_{10} is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_9 or R_4 to form a ring; R_{11} and R_{15} are, independently, hydrogen or an inert functional group.

6. (Original) The process of Claim 3 wherein R_1-R_5, R_7-R_9 and R_{12}-R_{14} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_7-R_9 and R_{12}-R_{14} vicinal to one another taken together may form a ring; R_6, R_{10}, R_{11} and R_{15} are identical and are each selected from fluorine or chlorine.

7. (Currently amended) A process for producing higher linear alpha olefins and/or alkyl-branched alpha olefins <u>having a chain length of from 4 to 100 carbon atoms</u> comprising:

co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of

a metal catalyst system employing one or more bis-aryliminepyridine MX_a complexes and/or one or more [bis-aryliminepyridine $MY_p.L_b^+$][NC^-]$_q$ complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



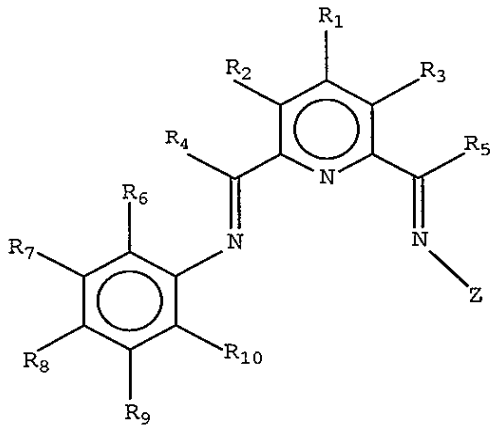
(I)

wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC^- is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R_1-R_5 are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3 vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being π-co-ordinated to the metal; said co-oligomerizing being carried out under conditions comprising an ethylene pressure of ~~less than 2.5 MPa~~ from about 0.1 MPa to about 1.6 MPa and a temperature of about -100°C to about 300°C, wherein alpha olefin co-monomer is present in a concentration of greater than 1 $mol.l^{-1}$.

Please add the following new claims:

Claims 8-12 (canceled).

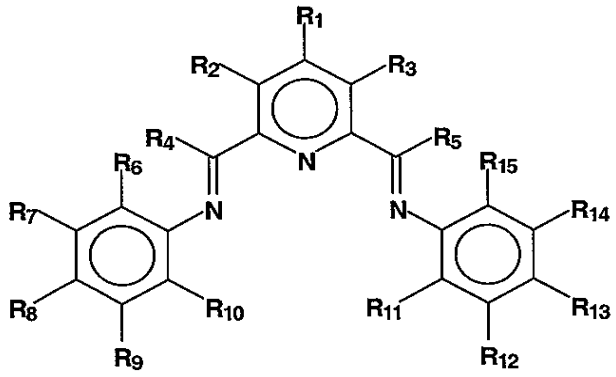
13. (Withdrawn) The process of claim 7 wherein said ligand is of the formula,



(II)

wherein R_1-R_{10} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_6-R_{10} vicinal to one another taken together may form a ring; R_6 may be taken together with R_4 to form a ring; R_{10} may be taken together with R_4 to form a ring; Z is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being π-co-ordinated to the metal.

14. (Withdrawn) The process of claim 7 wherein said ligand is of the formula,



(III)

wherein R_1-R_5, R_7-R_9 and R_{12}-R_{14} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_7-R_9 and R_{12}-R_{14} vicinal to one another taken together may form a ring; R_6 is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_7 or R_4 to form a ring; R_{10} is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken

together with R_9 or R_4 to form a ring; R_{11} is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_5 or R_{12} to form a ring; and R_{15} is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_5 or R_{14} to form a ring.

15. (Withdrawn) The process of claim 14 wherein R_1-R_5, R_7-R_9 and R_{12}-R_{14} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_7-R_9 and R_{12}-R_{14} vicinal to one another taken together may form a ring; R_6 is a primary carbon group, a secondary carbon group or a tertiary carbon group; and provided that:

when R_6 is a primary carbon group none, one or two of R_{10}, R_{11} and R_{15} are primary carbon groups, and the remainder of R_{10}, R_{11} and R_{15} are hydrogen;

when R_6 is a secondary carbon group none or one of R_{10}, R_{11} and R_{15} is a primary carbon group or a secondary carbon group and the remainder of R_{10}, R_{11} and R_{15} are hydrogen;

when R_6 is a tertiary carbon group all of R_{10}, R_{11} and R_{15} are hydrogen; and

any two of R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14} and R_{15} vicinal to one another, taken together may form a ring.

16. (Withdrawn) The process of claim 14 wherein R_1-R_5, R_7-R_9 and R_{12}-R_{14} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_7-R_9 and R_{12}-R_{14} vicinal to one another taken together may form a ring; R_6 is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_7 or R_4 to form a ring; R_{10} is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R_9 or R_4 to form a ring; R_{11} and R_{15} are, independently, hydrogen or an inert functional group.

17. (Previously presented) The process of claim 14 wherein R_1-R_5, R_7-R_9 and R_{12}-R_{14} are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3, R_7-R_9 and R_{12}-R_{14} vicinal to one another taken together may form a ring; R_6, R_{10}, R_{11} and R_{15} are identical and are each selected from fluorine or chlorine.

Cancel claim 18.

19. (Previously presented) The process of claim 1 wherein said conditions comprise a temperature of from about 0°C to about 200ºC.

Cancel claim 20.

21. (Previously presented) The process of claim 7 wherein said conditions comprise a temperature of from about 0°C to about 200ºC.

22. (Previously presented) The process of claim 7 wherein said conditions comprise a temperature of from about 50°C to about 150ºC.

Cancel claim 23.

24. (Previously presented) The process of claim 13 wherein said conditions comprise a temperature of from about 0°C to about 200ºC.

Cancel claim 25.

26. (Previously presented) The process of claim 14 wherein said conditions comprise a temperature of from about 0°C to about 200ºC.

Cancel claim 27.

28. (Previously presented) The process of claim 15 wherein said conditions comprise a temperature of from about 0°C to about 200ºC.

Cancel claim 29.

30. (Previously presented) The process of claim 16 wherein said conditions comprise a temperature of from about 0°C to about 200ºC.

Cancel claim 31.

32. (Previously presented) The process of claim 17 wherein said conditions comprise a temperature of from about 0°C to about 200ºC.

33. (Previously presented) The process of claim 17 wherein said conditions comprise a temperature of from about 50°C to about 150ºC.

Cancel claims 34-45.

46. (Previously presented) The process of claim 1 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 $mol.l^{-1}$.

47. (Previously presented) The process of claim 1 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 $mol.l^{-1}$.

48. (Previously presented) The process of claim 2 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 $mol.l^{-1}$.

49. (Previously presented) The process of claim 2 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 $mol.l^{-1}$.

50. (Previously presented) The process of claim 3 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 $mol.l^{-1}$.

51. (Previously presented) The process of claim 3 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 $mol.l^{-1}$.

52. (Previously presented) The process of claim 4 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 $mol.l^{-1}$.

53. (Previously presented) The process of claim 4 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 $mol.l^{-1}$.

54. (Previously presented) The process of claim 5 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 $mol.l^{-1}$.

55. (Previously presented) The process of claim 5 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 $mol.l^{-1}$.

56. (Previously presented) The process of claim 1 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

57. (Previously presented) The process of claim 7 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

58. (Previously presented) The process of claim 13 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

59. (Previously presented) The process of claim 14 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

60. (Previously presented) The process of claim 15 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

61. (Previously presented) The process of claim 16 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

62. (Previously presented) The process of claim 17 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

63. (Previously presented) The process of claim 20 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

64. (Previously presented) The process of claim 23 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

65. (Previously presented) The process of claim 46 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

66. (Previously presented) The process of claim 47 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

67. (Previously presented) The process of claim 1 wherein said conditions comprise an inert solvent.

68. (Previously presented) The process of claim 7 wherein said conditions comprise an inert solvent.

69. (Previously presented) The process of claim 46 wherein said conditions comprise an inert solvent.

70. (Previously presented) The process of claim 47 wherein said conditions comprise an inert solvent.

71. (Previously presented) The process of claim 65 wherein said conditions comprise an inert solvent.

72. (Previously presented) The process of claim 66 wherein said conditions comprise an inert solvent.

73. (Previously presented) The process of claim 67 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

74. (Previously presented) The process of claim 68 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

75. (Previously presented) The process of claim 69 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

76. (Previously presented) The process of claim 70 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

77. (Previously presented) The process of claim 71 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

78. (Previously presented) The process of claim 72 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

79. (Previously presented) The process of claim 67 wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

80. (Previously presented) The process of claim 68 wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

81. (Previously presented) The process of claim 69 wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

82. (Previously presented) The process of claim 70 wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

83. (Previously presented) The process of claim 71 wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

84. (Previously presented) The process of claim 72 wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

85. (Previously presented) The process of claim 1 wherein said conditions comprise the absence of air and moisture.

86. (Previously presented) The process of claim 7 wherein said conditions comprise the absence of air and moisture.

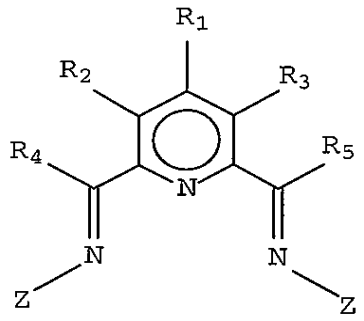
Please add the following new claims:

91. (New) A process for production of higher alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms and having the general structure:

$$C = C[-C-C]_n[-C]_m(R_1)-R_2$$

wherein R_1 is a methyl group; n = 0, 1, 2, etc.; m = 1; and R_2 is an optionally substituted hydrocarbyl, said process comprising:

co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX_a complexes and/or one or more [bis-aryliminepyridine $MY_p.L_b^+][NC^-]_q$ complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

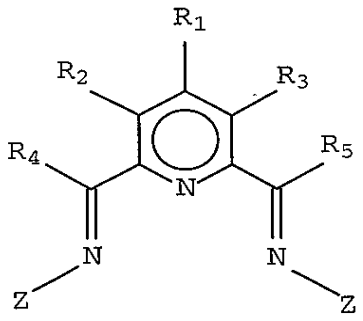
wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC- is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R_1-R_5 are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3 vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being π-co-ordinated to the metal; said co-oligomerising being carried out under conditions comprising an ethylene pressure of from about 0.1 MPa to about 1.6 MPa.

92. (New) A process for production of higher alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms and having the general structure:

$$C = C[-C-C]_n(R_1)-R_2$$

wherein R_1 is an ethyl group; n = 0, 1, 2, etc.; and R_2 is an optionally substituted hydrocarbyl, said process comprising:

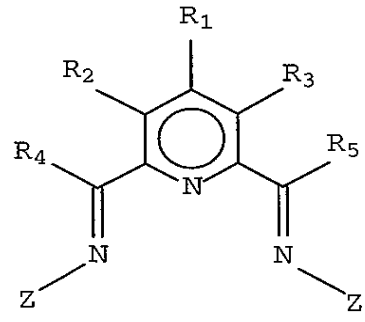
co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX_a complexes and/or one or more [bis-aryliminepyridine $MY_p.L_b^+][NC^-]_q$ complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC- is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R_1-R_5 are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3 vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being π-co-ordinated to the metal; said co-oligomerising being carried out under conditions comprising an ethylene pressure from about 0.1 MPa to about 1.6 MPa.

93. (New) A process for producing higher linear alpha olefins and/or alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms comprising:
co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX_a complexes and/or one or more [bis-aryliminepyridine $MY_p.L_b^+][NC^-]_q$ complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

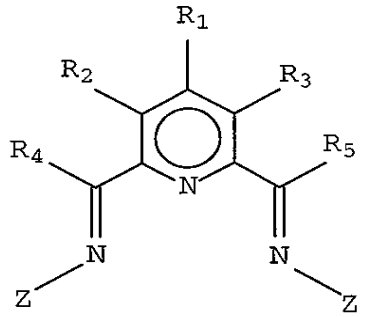
wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC^- is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R_1-R_5 are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3 vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being π-co-ordinated to the metal; said co-oligomerizing being carried out under conditions comprising an ethylene pressure of from about 0.1 MPa to about 1.6 MPa, wherein alpha olefin co-monomer is present in a concentration of greater than 1 $mol.l^{-1}$.

94. (New) A process for production of higher alkyl-branched alpha olefins having a chain length of from 1 to 100 carbon atoms and having the general structure:

$$C = C[\text{-}C\text{-}C]_n(R_1)\text{-}R_2$$

wherein R_1 is an ethyl group; n = 0, 1, 2, etc.; and R_2 is an optionally substituted hydrocarbyl, said process comprising:

co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX_a complexes and/or one or more [bis-aryliminepyridine $MY_p.L_b^+$][NC^-]$_q$ complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC- is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R_1-R_5 are each, independently, hydrogen, optionally

substituted hydrocarbyl, an inert functional group, or any two of R_1-R_3 vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being π-co-ordinated to the metal; said co-oligomerising being carried out under conditions comprising an ethylene pressure of from about 0.1 MPa to about 1.6 MPa.